

# ECM group

September 13, 2005

Joan Fleck  
RWQCB - North Coast Region  
5550 Sky Lane Blvd., Suite A  
Santa Rosa, CA 95403

Re: Resubmittal of Well Abandonment Proposal  
Redwood Coast Petroleum Bulk Fuel Facility  
455 Yolanda Avenue,  
Santa Rosa, CA

Dear Ms. Fleck:

This letter has been prepared in response to your letter dated July 27, 2005 regarding the Feasibility Study Workplan - Corrective Action Plan, and the proposed well abandonment at the above referenced site (Figures 1 and 2, Appendix A). The letter states that MW-17, MW-18, and MW-19 may be abandoned at this time, but that none of the other wells proposed for abandonment may be decommissioned.

ECM once again proposes that all the monitoring wells initially proposed for abandonment, with the exception of MW-5 and MW-5A, be abandoned. In addition to MW-17 through MW-18, this proposal includes the following wells:

conventionally-installed wells:	MW-11
	MW-12
	MW-15
	MW-16
	MW-20
	V-1
	AQU-2

multi-level wells:	MW-24
	MW-25
	MW-27
	MW-29

Well locations are shown in Figure 2, Appendix A. All wells proposed for abandonment were sampled in May 2005. Analytic results are submitted in Tables A and B (Appendix B).

Rationale for abandoning the wells is as follows:

#### MW-15, MW-16, and MW-20

In the July 27, 2005 letter the Board permitted the abandonment of MW-17, MW-18 and MW-19, but not the abandonment of MW-15, MW-16, or MW-20. However, analytic results for MW-15, MW-16, and MW-20 are essentially identical to results for MW-17 through MW-19. Xylenes (at 1.2 ppb) were detected in MW-17, which was permitted for destruction. Xylenes (at 1.1 ppb) were detected in MW-15 and MW-16. TBA (at 1.0 ppb, just above the detection limit) was also detected in MW-20. No other analytes were detected in MW-15 through MW-20.

MW-15 through MW-20 are all upgradient or crossgradient to the plume. It has been demonstrated that soil and groundwater has not been impacted in the area of these wells. The wells are not regularly sampled. Since abandonment is permitted for MW-17, MW-18, and MW-19, abandonment should also be permitted for MW-15, MW-16, and MW-20.

#### MW-11 and MW-12

Monitoring wells MW-11 and MW-12 are located dowgradient of the plume in an area of minimal impacts. The wells are not regularly sampled. In July 2005 both wells had very small detections for xylenes, similar to the detections in MW-18 and MW-19. MW-11 also had a detection of 9.5 ppb for MTBE.

Neither MW-11 and MW-12 are needed for site characterization. MW-11 is located immediately adjacent to multi-level well MW-24. MW-12 is located near multi-level well MW-23. The wells are not regularly sampled, and it is proposed and recommended that they be abandoned.

#### V-1 and AQU-2

As was discussed in the April, 2005 well abandonment proposal, V-1 is installed in an upgradient area of the plume. When V-1 was installed in 1991, the intention was to make V-1 a part of a vapor extraction system. When a vapor-extraction system was installed a number of years later, V-1 was not included in the system. V-1 is not sampled under the current site monitoring plan. V-1 is installed near monitoring well MW-1, so V-1 is not needed as a monitoring point.

In the May, 2005 sampling event, petroleum hydrocarbons and a trace concentration of MTBE

(0.6 ppb) were detected. For the reasons given in the above paragraph, this does not justify the retention of V-1. It is proposed that V-1 be abandoned.

AQU-2 was originally installed to investigate the release at the Aquistapace site, which was located on what is now the eastern portion of the Redwood Oil Bulk Plant. The Aquistapace site was granted case closure several years ago, but monitoring well AQU-2 was retained at the direction of Board staff. AQU-2 has never been monitored under the monitoring plan for this site. There is no rationale for the continued retention of AQU-2. It is proposed AQU-2 be abandoned.

#### Multi-Level Wells MW-24, MW-25, MW-27, and MW-29

MW-27 and MW-25 are located crossgradient (east and west, respectively) of the plume. MW-27 and MW-29 are located downgradient in areas of minimal contamination. Oxygenates and BTEX constituents were detected at extremely low concentrations in a number of sampling ports in these wells during the May, 2005 sampling. These concentrations are minimal and not sufficient to warrant retention of the wells. The wells should be abandoned for the reasons given in the April 2005 well abandonment proposal. In summary:

- 1.) MW-27 and MW-25 are located cross-gradient of the plume. Sufficient data has been generated to demonstrate that these areas are essentially unimpacted by the plume, with only minimal detections of analytes reported.
- 2.) MW-24 is located in a downgradient area of minimal impacts. The only detections during the latest round of sampling below the shallow zone were 17 and 1 ppb of TBA and MTBE respectively, at 146 ft bgs. These detections are not sufficient to justify retention of MW-24.
- 3.) MW-29 is located cross/downgradient (west) of the plume of contamination and was originally installed as a downgradient 'sentinel' well. Ground water elevation contours demonstrate that the ground water flow direction is consistently to the southeast, away from MW-29, so MW-29 is not needed as a downgradient sentinel well. MW-26 and MW-28 are suitable downgradient sentinel wells and will be retained.

Prior to the May 2005 sampling event, no analytes had ever been detected in MW-29. In the May 2005 sampling event, only minimal concentrations of TBA and BTEX constituents were detected. These detections are not sufficient to justify retention of MW-29.

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ECM requests that the Board reconsider the proposal to abandon the above-listed wells. Thank you for your attention to this site. Please call if you have questions or require additional information.

Sincerely,  
ECM Group



Jim Green  
Professional Engineer #C58482

Attachments: Appendix A - Figures  
Appendix B - Tables

cc: Peter Van Alyea, Redwood Oil Company

## **APPENDIX A**

### **FIGURES**

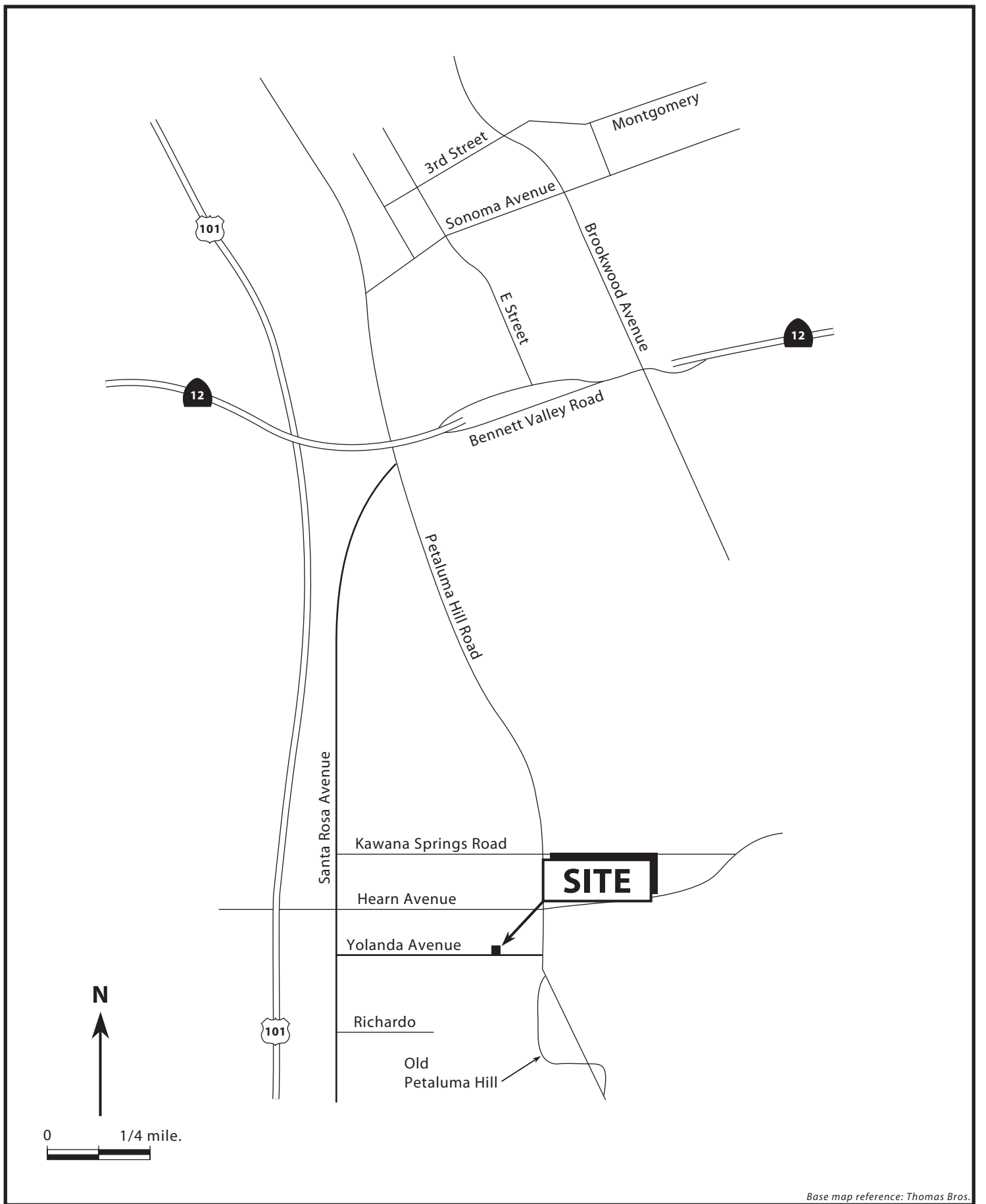


Figure 1. Site Location Map - Redwood Oil Service Station, 455 Yolanda Avenue, Santa Rosa, California

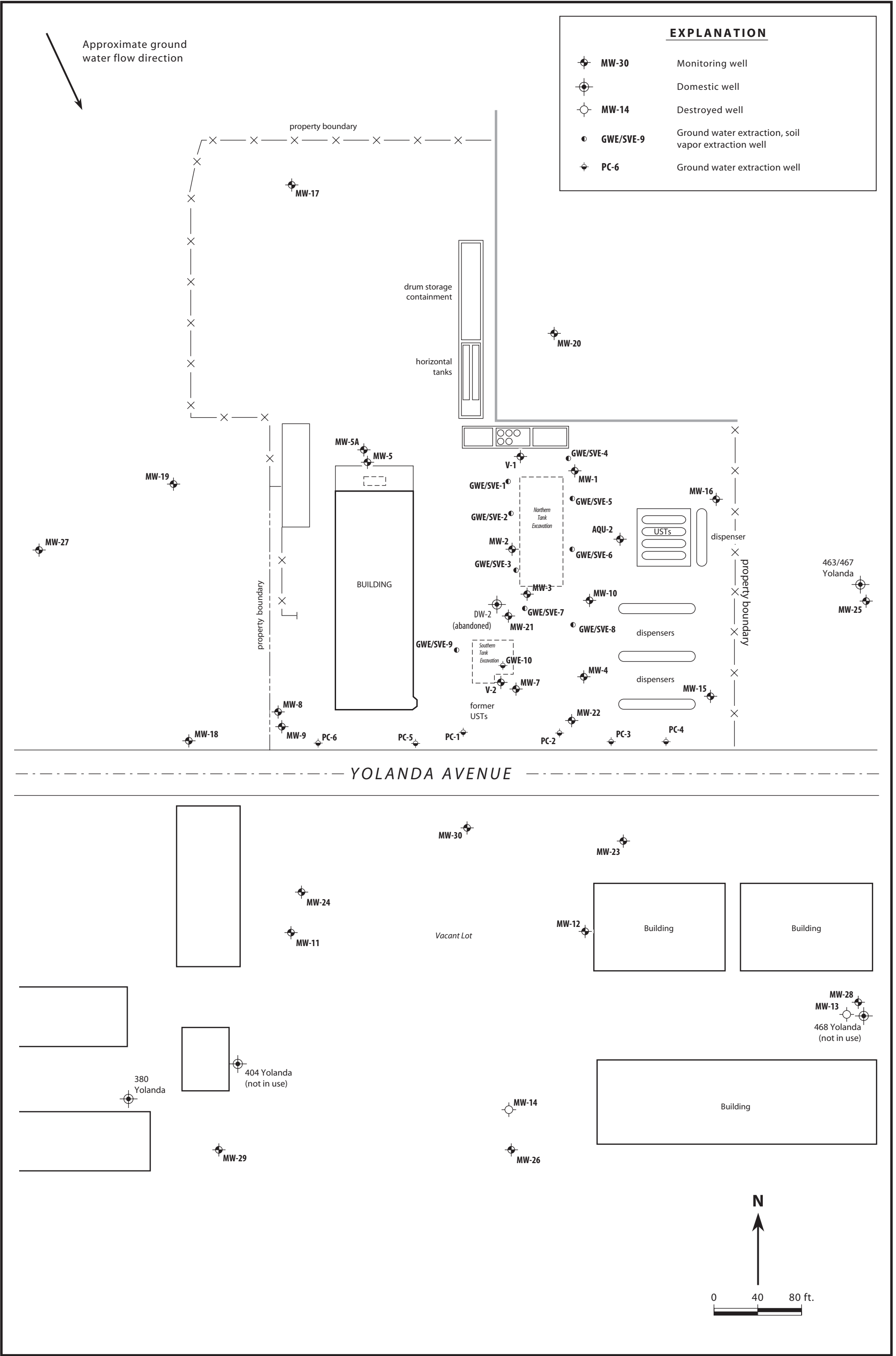


Figure 2. Well Locations - Redwood Oil Bulk Plant, 455 Yolanda Avenue, Santa Rosa, California

**APPENDIX B**  
**TABLES**



Table A: Analytic Results for Groundwater: Organic Compounds - May 2005 Sampling Event - Redwood Oil Bulk Plant, 455 Yolanda Avenue, Santa Rosa, California

Sample ID	Date Sampled	TPPH (G)	TPH (D)	TPH (MO)	Benzene	Toluene	Ethyl benzene	Xylenes	Notes*
		<----- ppb ----->							
MW-5	5/23/2005	<100	87	290	1.8	<0.5	<0.5	<1.5	
MW-5A	5/23/2005	240	9,800	41,000*	1.8	<0.5	<0.5	<1.5	see Note 2
MW-11	5/23/2005	<100	<50	---	<0.5	<0.5	<0.5	1.1	
MW-12	5/23/2005	<100	<50	---	<0.5	<0.5	<0.5	1.4	
MW-15	5/23/2005	<100	<50	---	<0.5	<0.5	<0.5	1.1	
MW-16	5/23/2005	<100	<50	---	<0.5	<0.5	<0.5	1.1	
MW-17	6/7/2005	<50	<50	---	<0.5	<0.5	<0.5	1.2	
MW-18	5/23/2005	<100	<50	---	<0.5	<0.5	<0.5	<1.5	
MW-19	5/23/2005	<100	<50	---	<0.5	<0.5	<0.5	<1.5	
MW-20	5/23/2005	<100	<50	---	<0.5	<0.5	<0.5	<1.5	
MW-24d25	5/25/2005	<100	<50	---	<0.5	<0.5	<0.5	<1.5	
MW-24d73	5/25/2005	<100	<50	---	<0.5	<0.5	<0.5	<1.5	
MW-24d146	5/25/2005	<100	<50	---	<0.5	<0.5	<0.5	<1.5	
MW-24d178	5/25/2005	<100	<50	---	<0.5	<0.5	<0.5	<1.5	
MW-25d25	5/26/2005	<100	<50	---	<0.5	<0.5	<0.5	<1.5	
MW-25d75	5/26/2005	<100	<50	---	<0.5	<0.5	<0.5	<1.5	
MW-25d145	5/26/2005	<100	<50	---	<0.5	2.9	<0.5	<1.5	
MW-25d180	5/26/2005	100	<50	---	<0.5	19	2.7	11.2	

Table A: Analytic Results for Groundwater: Organic Compounds - May 2005 Sampling Event - Redwood Oil Bulk Plant, 455 Yolanda Avenue, Santa Rosa, California

Sample ID	Date Sampled	TPPH (G)	TPH (D)	TPH (MO)	Benzene	Toluene	Ethyl benzene	Xylenes	Notes*
		<----- ppb ----->							
MW-25d230	5/26/2005	100	<250*	---	<0.5	15	3.7	15.1	see Note 3
MW-27d25	5/26/2005	<100	<50	---	<0.5	<0.5	<0.5	<1.5	
MW-27d75	5/26/2005	<100	<50	---	<0.5	0.7	<0.5	<1.5	
MW-27d145	5/26/2005	<100	<250*	---	<0.5	0.9	0.6	1.7	see Note 3
MW-27d180	5/26/2005	<100	<50	---	<0.5	3	2.3	5.1	
MW-27d230	5/26/2005	<100	<50	---	<0.5	5.2	<0.5	<1.5	
MW-29d23	5/25/2005	<100	<50	---	<0.5	4.9	0.7	2.5	
MW-29d73	5/25/2005	<100	<50	---	<0.5	0.8*	<0.5	<1.5	see Note 1
MW-29d145	5/25/2005	<100	<50	---	<0.5	3.1	2.4	10.2	
MW-29d180	5/25/2005	<100	<50	---	<0.5	<0.5	<0.5	<1.5	
V-1	5/23/2005	3,300	1,000	---	150	1.3	15	8.1	
AQU-2	5/23/2005	<100	<50	---	<0.5	0.6	0.5	3.0	

Notes:

- 1 The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- 2 The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- 3 The sample was diluted.

Table B: Analytic Results for Groundwater: Oxygenates - May 2005 Sampling Event - Redwood Oil Bulk Plant, 455 yolanda Avenue, Santa Rosa, California

Well ID	Sample Date	Tert-Butanol	MTBE	Diisopropyl Ether	Ethyl-tert-butyl-ether	Tert-Amylmethyl ether	Notes
		-----ppb-----					
MW-5	5/23/2005	<5	<0.5	<0.5	<0.5	<0.5	
MW-5A	5/23/2005	390	28	<0.5	<0.5	<0.5	
MW-11	5/23/2005	<5	9.5	<0.5	<0.5	<0.5	
MW-12	5/23/2005	<5	<0.5	<0.5	<0.5	<0.5	
MW-15	5/23/2005	<5	<0.5	<0.5	<0.5	<0.5	
MW-16	5/23/2005	<5	<0.5	<0.5	<0.5	<0.5	
MW-17	6/7/2005	<10	<1.0	<5.0	<5.0	<5.0	
MW-18	5/23/2005	<5	<0.5	<0.5	<0.5	<0.5	
MW-19	5/23/2005	<5	<0.5	<0.5	<0.5	<0.5	
MW-20	5/23/2005	1.0	<0.5	<0.5	<0.5	<0.5	
MW-24d25	5/25/2005	13	43	<0.5	<0.5	<0.5	
MW-24d73	5/25/2005	<5	<0.5	<0.5	<0.5	<0.5	
MW-24d146	5/25/2005	17	1	<0.5	<0.5	<0.5	
MW-24d178	5/25/2005	<5	<0.5	<0.5	<0.5	<0.5	
MW-25d25	5/26/2005	<5	<0.5	<0.5	<0.5	<0.5	
MW-25d75	5/26/2005	<5	<0.5	<0.5	<0.5	<0.5	
MW-25d145	5/26/2005	19	<0.5	0.6	<0.5	<0.5	
MW-25d180	5/26/2005	20	<0.5	1	<0.5	<0.5	
MW-25d230	5/26/2005	17	<0.5	0.9	<0.5	<0.5	
MW-27d25	5/26/2005	<5	<0.5	<0.5	<0.5	<0.5	
MW-27d75	5/26/2005	24	<0.5	<0.5	<0.5	<0.5	
MW-27d145	5/26/2005	<5	<0.5	<0.5	<0.5	<0.5	
MW-27d180	5/26/2005	<5	<0.5	<0.5	<0.5	<0.5	
MW-27d230	5/26/2005	30	<0.5	0.7	<0.5	<0.5	

Table B: Analytic Results for Groundwater: Oxygenates - May 2005 Sampling Event - Redwood Oil Bulk Plant, 455 Yolanda Avenue, Santa Rosa, California

Well ID	Sample Date	Tert-Butanol	MTBE	Diisopropyl Ether	Ethyl-tert-butyl-ether	Tert-Amylmethyl ether	Notes
		-----ppb-----					
MW-29d23	5/25/2005	11	<0.5	<0.5	<0.5	<0.5	
MW-29d73	5/25/2005	8	<0.5	<0.5	<0.5	<0.5	
MW-29d145	5/25/2005	9	<0.5	<0.5	<0.5	<0.5	
MW-29d180	5/25/2005	8	<0.5	<0.5	<0.5	<0.5	
V-1	5/23/2005	<5	0.6	<0.5	<0.5	<0.5	
AOU-2	5/23/2005	<5	190	<0.5	0.5	3.6	

**Notes:**

Samples were tested for ethanol and for lead scavengers 1,2-Dichloroethane (EDC) and 1,2-Dibromoethane (EDB).

Results for all samples were non-detect at ethanol detection limit of <1,000 ppb and lead scavengers detection limit of <0.5 ppb

Results for sample MW-17 were non-detect at ethanol detection limit of <100 ppb and lead scavengers detection limit of <0.5 ppb